

SEQUENCE LISTING

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<120> DETECTION AND TREATMENT OF POLYCYSTIC KIDNEY DISEASE

<130> JHU1680-2

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<160> 113

<170> PatentIn version 3.0

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 tggcacctgg gcctgtccca ccagctcacg cctggaccca ccccaactca cattgcgtg 53460
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 gg 53522

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 <211> 4303
 <212> PRT
 <213> Homo sapiens

<400> 2

Met Pro Pro Ala Ala Pro Ala Arg Leu Ala Leu Ala Leu Gly
1 5 10 15

Leu Trp Leu Gly Ala Leu Ala Gly Gly Pro Gly Arg Gly Cys Gly Pro
20 25 30

Cys Glu Pro Pro Cys Leu Cys Gly Pro Ala Pro Gly Ala Ala Cys Arg
35 40 45

Val Asn Cys Ser Gly Arg Gly Leu Arg Thr Leu Gly Pro Ala Leu Arg

50	55	60
Ile Pro Ala Asp Ala Thr Glu Leu Asp Val Ser His Asn Leu Leu Arg		
65	70	75
Ala Leu Asp Val Gly Leu Leu Ala Asn Leu Ser Ala Leu Ala Glu Leu		
85	90	95
Asp Ile Ser Asn Asn Lys Ile Ser Thr Leu Glu Glu Gly Ile Phe Ala		
100	105	110
Asn Leu Phe Asn Leu Ser Glu Ile Asn Leu Ser Gly Asn Pro Phe Glu		
115	120	125
Cys Asp Cys Gly Leu Ala Trp Leu Pro Gln Trp Ala Glu Glu Gln Gln		
130	135	140
Val Arg Val Val Gln Pro Glu Ala Ala Thr Cys Ala Gly Pro Gly Ser		
145	150	155
Leu Ala Gly Gln Pro Leu Leu Gly Ile Pro Leu Leu Asp Ser Gly Cys		
165	170	175
Gly Glu Glu Tyr Val Ala Cys Leu Pro Asp Asn Ser Ser Gly Thr Val		
180	185	190
Ala Ala Val Ser Phe Ser Ala Ala His Glu Gly Leu Leu Gln Pro Glu		
195	200	205
Ala Cys Ser Ala Phe Cys Phe Ser Thr Gly Gln Gly Leu Ala Ala Leu		
210	215	220
Ser Glu Gln Gly Trp Cys Leu Cys Gly Ala Ala Gln Pro Ser Ser Ala		
225	230	235
Ser Phe Ala Cys Leu Ser Leu Cys Ser Gly Pro Pro Ala Pro Pro Ala		
245	250	255
Pro Thr Cys Arg Gly Pro Thr Leu Leu Gln His Val Phe Pro Ala Ser		
260	265	270
Pro Gly Ala Thr Leu Val Gly Pro His Gly Pro Leu Ala Ser Gly Gln		
275	280	285
Leu Ala Ala Phe His Ile Ala Ala Pro Leu Pro Val Thr Asp Thr Arg		
290	295	300
Trp Asp Phe Gly Asp Gly Ser Ala Glu Val Asp Ala Ala Gly Pro Ala		
305	310	315
Ala Ser His Arg Tyr Val Leu Pro Gly Arg Tyr His Val Thr Ala Val		
325	330	335
Leu Ala Leu Gly Ala Gly Ser Ala Leu Leu Gly Thr Asp Val Gln Val		
340	345	350
Glu Ala Ala Pro Ala Ala Leu Glu Leu Val Cys Pro Ser Ser Val Gln		
355	360	365
Ser Asp Glu Ser Leu Asp Leu Ser Ile Gln Asn Arg Gly Gly Ser Gly		
370	375	380

Leu Glu Ala Ala Tyr Ser Ile Val Ala Leu Gly Glu Glu Pro Ala Arg
 385 390 395 400
 Ala Val His Pro Leu Cys Pro Ser Asp Thr Glu Ile Phe Pro Gly Asn
 405 410 415
 Gly His Cys Tyr Arg Leu Val Val Glu Lys Ala Ala Trp Leu Gln Ala
 420 425 430
 Gln Glu Gln Cys Gln Ala Trp Ala Gly Ala Ala Leu Ala Met Val Asp
 435 440 445
 Ser Pro Ala Val Gln Arg Phe Leu Val Ser Arg Val Thr Arg Ser Leu
 450 455 460
 Asp Val Trp Ile Gly Phe Ser Thr Val Gln Gly Val Glu Val Gly Pro
 465 470 475 480
 Ala Pro Gln Gly Glu Ala Phe Ser Leu Glu Ser Cys Gln Asn Trp Leu
 485 490 495
 Pro Gly Glu Pro His Pro Ala Thr Ala Glu His Cys Val Arg Leu Gly
 500 505 510
 Pro Thr Gly Trp Cys Asn Thr Asp Leu Cys Ser Ala Pro His Ser Tyr
 515 520 525
 Val Cys Glu Leu Gln Pro Gly Gly Pro Val Gln Asp Ala Glu Asn Leu
 530 535 540
 Leu Val Gly Ala Pro Ser Gly Asp Leu Gln Gly Pro Leu Thr Pro Leu
 545 550 555 560
 Ala Gln Gln Asp Gly Leu Ser Ala Pro His Glu Pro Val Glu Val Met
 565 570 575
 Val Phe Pro Gly Leu Arg Leu Ser Arg Glu Ala Phe Leu Thr Thr Ala
 580 585 590
 Glu Phe Gly Thr Gln Glu Leu Arg Arg Pro Ala Gln Leu Arg Leu Gln
 595 600 605
 Val Tyr Arg Leu Leu Ser Thr Ala Gly Thr Pro Glu Asn Gly Ser Glu
 610 615 620
 Pro Glu Ser Arg Ser Pro Asp Asn Arg Thr Gln Leu Ala Pro Ala Cys
 625 630 635 640
 Met Pro Gly Gly Arg Trp Cys Pro Gly Ala Asn Ile Cys Leu Pro Leu
 645 650 655
 Asp Ala Ser Cys His Pro Gln Ala Cys Ala Asn Gly Cys Thr Ser Gly
 660 665 670
 Pro Gly Leu Pro Gly Ala Pro Tyr Ala Leu Trp Arg Glu Phe Leu Phe
 675 680 685
 Ser Val Pro Ala Gly Pro Pro Ala Gln Tyr Ser Val Thr Leu His Gly
 690 695 700

Gln Asp Val Leu Met Leu Pro Gly Asp Leu Val Gly Leu Gln His Asp
 705 710 715 720
 Ala Gly Pro Gly Ala Leu Leu His Cys Ser Pro Ala Pro Gly His Pro
 725 730 735
 Gly Pro Arg Ala Pro Tyr Leu Ser Ala Asn Ala Ser Ser Trp Leu Pro
 740 745 750
 His Leu Pro Ala Gln Leu Glu Gly Thr Trp Gly Cys Pro Ala Cys Ala
 755 760 765
 Leu Arg Leu Leu Ala Gln Arg Glu Gln Leu Thr Val Leu Leu Gly Leu
 770 775 780
 Arg Pro Asn Pro Gly Leu Arg Leu Pro Gly Arg Tyr Glu Val Arg Ala
 785 790 795 800
 Glu Val Gly Asn Gly Val Ser Arg His Asn Leu Ser Cys Ser Phe Asp
 805 810 815
 Val Val Ser Pro Val Ala Gly Leu Arg Val Ile Tyr Pro Ala Pro Arg
 820 825 830
 Asp Gly Arg Leu Tyr Val Pro Thr Asn Gly Ser Ala Leu Val Leu Gln
 835 840 845
 Val Asp Ser Gly Ala Asn Ala Thr Ala Thr Ala Arg Trp Pro Gly Gly
 850 855 860
 Ser Leu Ser Ala Arg Phe Glu Asn Val Cys Pro Ala Leu Val Ala Thr
 865 870 875 880
 Phe Val Pro Ala Cys Pro Trp Glu Thr Asn Asp Thr Leu Phe Ser Val
 885 890 895
 Val Ala Leu Pro Trp Leu Ser Glu Gly Glu His Val Val Asp Val Val
 900 905 910
 Val Glu Asn Ser Ala Ser Arg Ala Asn Leu Ser Leu Arg Val Thr Ala
 915 920 925
 Glu Glu Pro Ile Cys Gly Leu Arg Ala Thr Pro Ser Pro Glu Ala Arg
 930 935 940
 Val Leu Gln Gly Val Leu Val Arg Tyr Ser Pro Val Val Glu Ala Gly
 945 950 955 960
 Ser Asp Met Val Phe Arg Trp Thr Ile Asn Asp Lys Gln Ser Leu Thr
 965 970 975
 Phe Gln Asn Val Val Phe Asn Val Ile Tyr Gln Ser Ala Ala Val Phe
 980 985 990
 Lys Leu Ser Leu Thr Ala Ser Asn His Val Ser Asn Val Thr Val Asn
 995 1000 1005
 Tyr Asn Val Thr Val Glu Arg Met Asn Arg Met Gln Gly Leu Gln
 1010 1015 1020
 Val Ser Thr Val Pro Ala Val Leu Ser Pro Asn Ala Thr Leu Ala

1025	1030	1035
Leu Thr Ala Gly Val Leu Val Asp Ser Ala Val Glu Val Ala Phe		
1040	1045	1050
Leu Trp Thr Phe Gly Asp Gly Glu Gln Ala Leu His Gln Phe Gln		
1055	1060	1065
Pro Pro Tyr Asn Glu Ser Phe Pro Val Pro Asp Pro Ser Val Ala		
1070	1075	1080
Gln Val Leu Val Glu His Asn Val Thr His Thr Tyr Ala Ala Pro		
1085	1090	1095
Gly Glu Tyr Leu Leu Thr Val Leu Ala Ser Asn Ala Phe Glu Asn		
1100	1105	1110
Leu Thr Gln Gln Val Pro Val Ser Val Arg Ala Ser Leu Pro Ser		
1115	1120	1125
Val Ala Val Gly Val Ser Asp Gly Val Leu Val Ala Gly Arg Pro		
1130	1135	1140
Val Thr Phe Tyr Pro His Pro Leu Pro Ser Pro Gly Gly Val Leu		
1145	1150	1155
Tyr Thr Trp Asp Phe Gly Asp Gly Ser Pro Val Leu Thr Gln Ser		
1160	1165	1170
Gln Pro Ala Ala Asn His Thr Tyr Ala Ser Arg Gly Thr Tyr His		
1175	1180	1185
Val Arg Leu Glu Val Asn Asn Thr Val Ser Gly Ala Ala Ala Gln		
1190	1195	1200
Ala Asp Val Arg Val Phe Glu Glu Leu Arg Gly Leu Ser Val Asp		
1205	1210	1215
Met Ser Leu Ala Val Glu Gln Gly Ala Pro Val Val Val Ser Ala		
1220	1225	1230
Ala Val Gln Thr Gly Asp Asn Ile Thr Trp Thr Phe Asp Met Gly		
1235	1240	1245
Asp Gly Thr Val Leu Ser Gly Pro Glu Ala Thr Val Glu His Val		
1250	1255	1260
Tyr Leu Arg Ala Gln Asn Cys Thr Val Thr Val Gly Ala Gly Ser		
1265	1270	1275
Pro Ala Gly His Leu Ala Arg Ser Leu His Val Leu Val Phe Val		
1280	1285	1290
Leu Glu Val Leu Arg Val Glu Pro Ala Ala Cys Ile Pro Thr Gln		
1295	1300	1305
Pro Asp Ala Arg Leu Thr Ala Tyr Val Thr Gly Asn Pro Ala His		
1310	1315	1320
Tyr Leu Phe Asp Trp Thr Phe Gly Asp Gly Ser Ser Asn Thr Thr		
1325	1330	1335

Val Arg Gly Cys Pro Thr Val Thr His Asn Phe Thr Arg Ser Gly
 1340 1345 1350
 Thr Phe Pro Leu Ala Leu Val Leu Ser Ser Arg Val Asn Arg Ala
 1355 1360 1365
 His Tyr Phe Thr Ser Ile Cys Val Glu Pro Glu Val Gly Asn Val
 1370 1375 1380
 Thr Leu Gln Pro Glu Arg Gln Phe Val Gln Leu Gly Asp Glu Ala
 1385 1390 1395
 Trp Leu Val Ala Cys Ala Trp Pro Pro Phe Pro Tyr Arg Tyr Thr
 1400 1405 1410
 Trp Asp Phe Gly Thr Glu Glu Ala Ala Pro Thr Arg Ala Arg Gly
 1415 1420 1425
 Pro Glu Val Thr Phe Ile Tyr Arg Asp Pro Gly Ser Tyr Leu Val
 1430 1435 1440
 Thr Val Thr Ala Ser Asn Asn Ile Ser Ala Ala Asn Asp Ser Ala
 1445 1450 1455
 Leu Val Glu Val Gln Glu Pro Val Leu Val Thr Ser Ile Lys Val
 1460 1465 1470
 Asn Gly Ser Leu Gly Leu Glu Leu Gln Gln Pro Tyr Leu Phe Ser
 1475 1480 1485
 Ala Val Gly Arg Gly Arg Pro Ala Ser Tyr Leu Trp Asp Leu Gly
 1490 1495 1500
 Asp Gly Gly Trp Leu Glu Gly Pro Glu Val Thr His Ala Tyr Asn
 1505 1510 1515
 Ser Thr Gly Asp Phe Thr Val Arg Val Ala Gly Trp Asn Glu Val
 1520 1525 1530
 Ser Arg Ser Glu Ala Trp Leu Asn Val Thr Val Lys Arg Arg Val
 1535 1540 1545
 Arg Gly Leu Val Val Asn Ala Ser Arg Thr Val Val Pro Leu Asn
 1550 1555 1560
 Gly Ser Val Ser Phe Ser Thr Ser Leu Glu Ala Gly Ser Asp Val
 1565 1570 1575
 Arg Tyr Ser Trp Val Leu Cys Asp Arg Cys Thr Pro Ile Pro Gly
 1580 1585 1590
 Gly Pro Thr Ile Ser Tyr Thr Phe Arg Ser Val Gly Thr Phe Asn
 1595 1600 1605
 Ile Ile Val Thr Ala Glu Asn Glu Val Gly Ser Ala Gln Asp Ser
 1610 1615 1620
 Ile Phe Val Tyr Val Leu Gln Leu Ile Glu Gly Leu Gln Val Val
 1625 1630 1635

Gly Gly Gly Arg Tyr Phe Pro Thr Asn His Thr Val Gln Leu Gln
 1640 1645 1650
 Ala Val Val Arg Asp Gly Thr Asn Val Ser Tyr Ser Trp Thr Ala
 1655 1660 1665
 Trp Arg Asp Arg Gly Pro Ala Leu Ala Gly Ser Gly Lys Gly Phe
 1670 1675 1680
 Ser Leu Thr Val Leu Glu Ala Gly Thr Tyr His Val Gln Leu Arg
 1685 1690 1695
 Ala Thr Asn Met Leu Gly Ser Ala Trp Ala Asp Cys Thr Met Asp
 1700 1705 1710
 Phe Val Glu Pro Val Gly Trp Leu Met Val Ala Ala Ser Pro Asn
 1715 1720 1725
 Pro Ala Ala Val Asn Thr Ser Val Thr Leu Ser Ala Glu Leu Ala
 1730 1735 1740
 Gly Gly Ser Gly Val Val Tyr Thr Trp Ser Leu Glu Glu Gly Leu
 1745 1750 1755
 Ser Trp Glu Thr Ser Glu Pro Phe Thr Thr His Ser Phe Pro Thr
 1760 1765 1770
 Pro Gly Leu His Leu Val Thr Met Thr Ala Gly Asn Pro Leu Gly
 1775 1780 1785
 Ser Ala Asn Ala Thr Val Glu Val Asp Val Gln Val Pro Val Ser
 1790 1795 1800
 Gly Leu Ser Ile Arg Ala Ser Glu Pro Gly Gly Ser Phe Val Ala
 1805 1810 1815
 Ala Gly Ser Ser Val Pro Phe Trp Gly Gln Leu Ala Thr Gly Thr
 1820 1825 1830
 Asn Val Ser Trp Cys Trp Ala Val Pro Gly Gly Ser Ser Lys Arg
 1835 1840 1845
 Gly Pro His Val Thr Met Val Phe Pro Asp Ala Gly Thr Phe Ser
 1850 1855 1860
 Ile Arg Leu Asn Ala Ser Asn Ala Val Ser Trp Val Ser Ala Thr
 1865 1870 1875
 Tyr Asn Leu Thr Ala Glu Glu Pro Ile Val Gly Leu Val Leu Trp
 1880 1885 1890
 Ala Ser Ser Lys Val Val Ala Pro Gly Gln Leu Val His Phe Gln
 1895 1900 1905
 Ile Leu Leu Ala Ala Gly Ser Ala Val Thr Phe Arg Leu Gln Val
 1910 1915 1920
 Gly Gly Ala Asn Pro Glu Val Leu Pro Gly Pro Arg Phe Ser His
 1925 1930 1935
 Ser Phe Pro Arg Val Gly Asp His Val Val Ser Val Arg Gly Lys

1940	1945	1950
Asn His Val Ser Trp Ala Gln	Ala Gln Val Arg Ile	Val Val Leu
1955	1960	1965
Glu Ala Val Ser Gly Leu Gln	Val Pro Asn Cys Cys	Glu Pro Gly
1970	1975	1980
Ile Ala Thr Gly Thr Glu Arg	Asn Phe Thr Ala Arg	Val Gln Arg
1985	1990	1995
Gly Ser Arg Val Ala Tyr Ala	Trp Tyr Phe Ser Leu	Gln Lys Val
2000	2005	2010
Gln Gly Asp Ser Leu Val Ile	Leu Ser Gly Arg Asp	Val Thr Tyr
2015	2020	2025
Thr Pro Val Ala Ala Gly Leu	Leu Glu Ile Gln Val	Arg Ala Phe
2030	2035	2040
Asn Ala Leu Gly Ser Glu Asn	Arg Thr Leu Val Leu	Glu Val Gln
2045	2050	2055
Asp Ala Val Gln Tyr Val Ala	Leu Gln Ser Gly Pro	Cys Phe Thr
2060	2065	2070
Asn Arg Ser Ala Gln Phe Glu	Ala Ala Thr Ser Pro	Ser Pro Arg
2075	2080	2085
Arg Val Ala Tyr His Trp Asp	Phe Gly Asp Gly Ser	Pro Gly Gln
2090	2095	2100
Asp Thr Asp Glu Pro Arg Ala	Glu His Ser Tyr Leu	Arg Pro Gly
2105	2110	2115
Asp Tyr Arg Val Gln Val Asn	Ala Ser Asn Leu Val	Ser Phe Phe
2120	2125	2130
Val Ala Gln Ala Thr Val Thr	Val Gln Val Leu Ala	Cys Arg Glu
2135	2140	2145
Pro Glu Val Asp Val Val Leu	Pro Leu Gln Val Leu	Met Arg Arg
2150	2155	2160
Ser Gln Arg Asn Tyr Leu Glu	Ala His Val Asp Leu	Arg Asp Cys
2165	2170	2175
Val Thr Tyr Gln Thr Glu Tyr	Arg Trp Glu Val Tyr	Arg Thr Ala
2180	2185	2190
Ser Cys Gln Arg Pro Gly Arg	Pro Ala Arg Val Ala	Leu Pro Gly
2195	2200	2205
Val Asp Val Ser Arg Pro Arg	Leu Val Leu Pro Arg	Leu Ala Leu
2210	2215	2220
Pro Val Gly His Tyr Cys Phe	Val Phe Val Val Ser	Phe Gly Asp
2225	2230	2235
Thr Pro Leu Thr Gln Ser Ile	Gln Ala Asn Val Thr	Val Ala Pro
2240	2245	2250

Glu Arg Leu Val Pro Ile Ile Glu Gly Gly Ser Tyr Arg Val Trp
 2255 2260 2265
 Ser Asp Thr Arg Asp Leu Val Leu Asp Gly Ser Glu Ser Tyr Asp
 2270 2275 2280
 Pro Asn Leu Glu Asp Gly Asp Gln Thr Pro Leu Ser Phe His Trp
 2285 2290 2295
 Ala Cys Val Ala Ser Thr Gln Arg Glu Ala Gly Gly Cys Ala Leu
 2300 2305 2310
 Asn Phe Gly Pro Arg Gly Ser Ser Thr Val Thr Ile Pro Arg Glu
 2315 2320 2325
 Arg Leu Ala Ala Gly Val Glu Tyr Thr Phe Ser Leu Thr Val Trp
 2330 2335 2340
 Lys Ala Gly Arg Lys Glu Glu Ala Thr Asn Gln Thr Val Leu Ile
 2345 2350 2355
 Arg Ser Gly Arg Val Pro Ile Val Ser Leu Glu Cys Val Ser Cys
 2360 2365 2370
 Lys Ala Gln Ala Val Tyr Glu Val Ser Arg Ser Ser Tyr Val Tyr
 2375 2380 2385
 Leu Glu Gly Arg Cys Leu Asn Cys Ser Ser Gly Ser Lys Arg Gly
 2390 2395 2400
 Arg Trp Ala Ala Arg Thr Phe Ser Asn Lys Thr Leu Val Leu Asp
 2405 2410 2415
 Glu Thr Thr Thr Ser Thr Gly Ser Ala Gly Met Arg Leu Val Leu
 2420 2425 2430
 Arg Arg Gly Val Leu Arg Asp Gly Glu Gly Tyr Thr Phe Thr Leu
 2435 2440 2445
 Thr Val Leu Gly Arg Ser Gly Glu Glu Glu Gly Cys Ala Ser Ile
 2450 2455 2460
 Arg Leu Ser Pro Asn Arg Pro Pro Leu Gly Gly Ser Cys Arg Leu
 2465 2470 2475
 Phe Pro Leu Gly Ala Val His Ala Leu Thr Thr Lys Val His Phe
 2480 2485 2490
 Glu Cys Thr Gly Trp His Asp Ala Glu Asp Ala Gly Ala Pro Leu
 2495 2500 2505
 Val Tyr Ala Leu Leu Leu Arg Arg Cys Arg Gln Gly His Cys Glu
 2510 2515 2520
 Glu Phe Cys Val Tyr Lys Gly Ser Leu Ser Ser Tyr Gly Ala Val
 2525 2530 2535
 Leu Pro Pro Gly Phe Arg Pro His Phe Glu Val Gly Leu Ala Val
 2540 2545 2550

Val Val Gln Asp Gln Leu Gly Ala Ala Val Val Ala Leu Asn Arg
 2555 2560 2565
 Ser Leu Ala Ile Thr Leu Pro Glu Pro Asn Gly Ser Ala Thr Gly
 2570 2575 2580
 Leu Thr Val Trp Leu His Gly Leu Thr Ala Ser Val Leu Pro Gly
 2585 2590 2595
 Leu Leu Arg Gln Ala Asp Pro Gln His Val Ile Glu Tyr Ser Leu
 2600 2605 2610
 Ala Leu Val Thr Val Leu Asn Glu Tyr Glu Arg Ala Leu Asp Val
 2615 2620 2625
 Ala Ala Glu Pro Lys His Glu Arg Gln His Arg Ala Gln Ile Arg
 2630 2635 2640
 Lys Asn Ile Thr Glu Thr Leu Val Ser Leu Arg Val His Thr Val
 2645 2650 2655
 Asp Asp Ile Gln Gln Ile Ala Ala Ala Leu Ala Gln Cys Met Gly
 2660 2665 2670
 Pro Ser Arg Glu Leu Val Cys Arg Ser Cys Leu Lys Gln Thr Leu
 2675 2680 2685
 His Lys Leu Glu Ala Met Met Leu Ile Leu Gln Ala Glu Thr Thr
 2690 2695 2700
 Ala Gly Thr Val Thr Pro Thr Ala Ile Gly Asp Ser Ile Leu Asn
 2705 2710 2715
 Ile Thr Gly Asp Leu Ile His Leu Ala Ser Ser Asp Val Arg Ala
 2720 2725 2730
 Pro Gln Pro Ser Glu Leu Gly Ala Glu Ser Pro Ser Arg Met Val
 2735 2740 2745
 Ala Ser Gln Ala Tyr Asn Leu Thr Ser Ala Leu Met Arg Ile Leu
 2750 2755 2760
 Met Arg Ser Arg Val Leu Asn Glu Glu Pro Leu Thr Leu Ala Gly
 2765 2770 2775
 Glu Glu Ile Val Ala Gln Gly Lys Arg Ser Asp Pro Arg Ser Leu
 2780 2785 2790
 Leu Cys Tyr Gly Gly Ala Pro Gly Pro Gly Cys His Phe Ser Ile
 2795 2800 2805
 Pro Glu Ala Phe Ser Gly Ala Leu Ala Asn Leu Ser Asp Val Val
 2810 2815 2820
 Gln Leu Ile Phe Leu Val Asp Ser Asn Pro Phe Pro Phe Gly Tyr
 2825 2830 2835
 Ile Ser Asn Tyr Thr Val Ser Thr Lys Val Ala Ser Met Ala Phe
 2840 2845 2850
 Gln Thr Gln Ala Gly Ala Gln Ile Pro Ile Glu Arg Leu Ala Ser

2855		2860		2865										
Glu	Arg	Ala	Ile	Thr	Val	Lys	Val	Pro	Asn	Asn	Ser	Asp	Trp	Ala
2870						2875						2880		
Ala	Arg	Gly	His	Arg	Ser	Ser	Ala	Asn	Ser	Ala	Asn	Ser	Val	Val
2885						2890						2895		
Val	Gln	Pro	Gln	Ala	Ser	Val	Gly	Ala	Val	Val	Thr	Leu	Asp	Ser
2900						2905						2910		
Ser	Asn	Pro	Ala	Ala	Gly	Leu	His	Leu	Gln	Leu	Asn	Tyr	Thr	Leu
2915						2920						2925		
Leu	Asp	Gly	His	Tyr	Leu	Ser	Glu	Glu	Pro	Glu	Pro	Tyr	Leu	Ala
2930						2935						2940		
Val	Tyr	Leu	His	Ser	Glu	Pro	Arg	Pro	Asn	Glu	His	Asn	Cys	Ser
2945						2950						2955		
Ala	Ser	Arg	Arg	Ile	Arg	Pro	Glu	Ser	Leu	Gln	Gly	Ala	Asp	His
2960						2965						2970		
Arg	Pro	Tyr	Thr	Phe	Phe	Ile	Ser	Pro	Gly	Ser	Arg	Asp	Pro	Ala
2975						2980						2985		
Gly	Ser	Tyr	His	Leu	Asn	Leu	Ser	Ser	His	Phe	Arg	Trp	Ser	Ala
2990						2995						3000		
Leu	Gln	Val	Ser	Val	Gly	Leu	Tyr	Thr	Ser	Leu	Cys	Gln	Tyr	Phe
3005						3010						3015		
Ser	Glu	Glu	Asp	Met	Val	Trp	Arg	Thr	Glu	Gly	Leu	Leu	Pro	Leu
3020						3025						3030		
Glu	Glu	Thr	Ser	Pro	Arg	Gln	Ala	Val	Cys	Leu	Thr	Arg	His	Leu
3035						3040						3045		
Thr	Ala	Phe	Gly	Ala	Ser	Leu	Phe	Val	Pro	Pro	Ser	His	Val	Arg
3050						3055						3060		
Phe	Val	Phe	Pro	Glu	Pro	Thr	Ala	Asp	Val	Asn	Tyr	Ile	Val	Met
3065						3070						3075		
Leu	Thr	Cys	Ala	Val	Cys	Leu	Val	Thr	Tyr	Met	Val	Met	Ala	Ala
3080						3085						3090		
Ile	Leu	His	Lys	Leu	Asp	Gln	Leu	Asp	Ala	Ser	Arg	Gly	Arg	Ala
3095						3100						3105		
Ile	Pro	Phe	Cys	Gly	Gln	Arg	Gly	Arg	Phe	Lys	Tyr	Glu	Ile	Leu
3110						3115						3120		
Val	Lys	Thr	Gly	Trp	Gly	Arg	Gly	Ser	Gly	Thr	Thr	Ala	His	Val
3125						3130						3135		
Gly	Ile	Met	Leu	Tyr	Gly	Val	Asp	Ser	Arg	Ser	Gly	His	Arg	His
3140						3145						3150		
Leu	Asp	Gly	Asp	Arg	Ala	Phe	His	Arg	Asn	Ser	Leu	Asp	Ile	Phe
3155						3160						3165		

Arg Ile Ala Thr Pro His Ser Leu Gly Ser Val Trp Lys Ile Arg
 3170 3175 3180
 Val Trp His Asp Asn Lys Gly Leu Ser Pro Ala Trp Phe Leu Gln
 3185 3190 3195
 His Val Ile Val Arg Asp Leu Gln Thr Ala Arg Ser Ala Phe Phe
 3200 3205 3210
 Leu Val Asn Asp Trp Leu Ser Val Glu Thr Glu Ala Asn Gly Gly
 3215 3220 3225
 Leu Val Glu Lys Glu Val Leu Ala Ala Ser Asp Ala Ala Leu Leu
 3230 3235 3240
 Arg Phe Arg Arg Leu Leu Val Ala Glu Leu Gln Arg Gly Phe Phe
 3245 3250 3255
 Asp Lys His Ile Trp Leu Ser Ile Trp Asp Arg Pro Pro Arg Ser
 3260 3265 3270
 Arg Phe Thr Arg Ile Gln Arg Ala Thr Cys Cys Val Leu Leu Ile
 3275 3280 3285
 Cys Leu Phe Leu Gly Ala Asn Ala Val Trp Tyr Gly Ala Val Gly
 3290 3295 3300
 Asp Ser Ala Tyr Ser Thr Gly His Val Ser Arg Leu Ser Pro Leu
 3305 3310 3315
 Ser Val Asp Thr Val Ala Val Gly Leu Val Ser Ser Val Val Val
 3320 3325 3330
 Tyr Pro Val Tyr Leu Ala Ile Leu Phe Leu Phe Arg Met Ser Arg
 3335 3340 3345
 Ser Lys Val Ala Gly Ser Pro Ser Pro Thr Pro Ala Gly Gln Gln
 3350 3355 3360
 Val Leu Asp Ile Asp Ser Cys Leu Asp Ser Ser Val Leu Asp Ser
 3365 3370 3375
 Ser Phe Leu Thr Phe Ser Gly Leu His Ala Glu Gln Ala Phe Val
 3380 3385 3390
 Gly Gln Met Lys Ser Asp Leu Phe Leu Asp Asp Ser Lys Ser Leu
 3395 3400 3405
 Val Cys Trp Pro Ser Gly Glu Gly Thr Leu Ser Trp Pro Asp Leu
 3410 3415 3420
 Leu Ser Asp Pro Ser Ile Val Gly Ser Asn Leu Arg Gln Leu Ala
 3425 3430 3435
 Arg Gly Gln Ala Gly His Gly Leu Gly Pro Glu Glu Asp Gly Phe
 3440 3445 3450
 Ser Leu Ala Ser Pro Tyr Ser Pro Ala Lys Ser Phe Ser Ala Ser
 3455 3460 3465

Asp Glu Asp Leu Ile Gln Gln Val Leu Ala Glu Gly Val Ser Ser
 3470 3475 3480

Pro Ala Pro Thr Gln Asp Thr His Met Glu Thr Asp Leu Leu Ser
 3485 3490 3495

Ser Leu Ser Ser Thr Pro Gly Glu Lys Thr Glu Thr Leu Ala Leu
 3500 3505 3510

Gln Arg Leu Gly Glu Leu Gly Pro Pro Ser Pro Gly Leu Asn Trp
 3515 3520 3525

Glu Gln Pro Gln Ala Ala Arg Leu Ser Arg Thr Gly Leu Val Glu
 3530 3535 3540

Gly Leu Arg Lys Arg Leu Leu Pro Ala Trp Cys Ala Ser Leu Ala
 3545 3550 3555

His Gly Leu Ser Leu Leu Leu Val Ala Val Ala Val Ala Val Ser
 3560 3565 3570

Gly Trp Val Gly Ala Ser Phe Pro Pro Gly Val Ser Val Ala Trp
 3575 3580 3585

Leu Leu Ser Ser Ser Ala Ser Phe Leu Ala Ser Phe Leu Gly Trp
 3590 3595 3600

Glu Pro Leu Lys Val Leu Leu Glu Ala Leu Tyr Phe Ser Leu Val
 3605 3610 3615

Ala Lys Arg Leu His Pro Asp Glu Asp Asp Thr Leu Val Glu Ser
 3620 3625 3630

Pro Ala Val Thr Pro Val Ser Ala Arg Val Pro Arg Val Arg Pro
 3635 3640 3645

Pro His Gly Phe Ala Leu Phe Leu Ala Lys Glu Glu Ala Arg Lys
 3650 3655 3660

Val Lys Arg Leu His Gly Met Leu Arg Ser Leu Leu Val Tyr Met
 3665 3670 3675

Leu Phe Leu Leu Val Thr Leu Leu Ala Ser Tyr Gly Asp Ala Ser
 3680 3685 3690

Cys His Gly His Ala Tyr Arg Leu Gln Ser Ala Ile Lys Gln Glu
 3695 3700 3705

Leu His Ser Arg Ala Phe Leu Ala Ile Thr Arg Ser Glu Glu Leu
 3710 3715 3720

Trp Pro Trp Met Ala His Val Leu Leu Pro Tyr Val His Gly Asn
 3725 3730 3735

Gln Ser Ser Pro Glu Leu Gly Pro Pro Arg Leu Arg Gln Val Arg
 3740 3745 3750

Leu Gln Glu Ala Leu Tyr Pro Asp Pro Pro Gly Pro Arg Val His
 3755 3760 3765

Thr Cys Ser Ala Ala Gly Gly Phe Ser Thr Ser Asp Tyr Asp Val

3770	3775	3780
Gly Trp Glu Ser Pro His Asn	Gly Ser Gly Thr Trp	Ala Tyr Ser
3785	3790	3795
Ala Pro Asp Leu Leu Gly Ala	Trp Ser Trp Gly Ser	Cys Ala Val
3800	3805	3810
Tyr Asp Ser Gly Gly Tyr Val	Gln Glu Leu Gly Leu	Ser Leu Glu
3815	3820	3825
Glu Ser Arg Asp Arg Leu Arg	Phe Leu Gln Leu His	Asn Trp Leu
3830	3835	3840
Asp Asn Arg Ser Arg Ala Val	Phe Leu Glu Leu Thr	Arg Tyr Ser
3845	3850	3855
Pro Ala Val Gly Leu His Ala	Ala Val Thr Leu Arg	Leu Glu Phe
3860	3865	3870
Pro Ala Ala Gly Arg Ala Leu	Ala Ala Leu Ser Val	Arg Pro Phe
3875	3880	3885
Ala Leu Arg Arg Leu Ser Ala	Gly Leu Ser Leu Pro	Leu Leu Thr
3890	3895	3900
Ser Val Cys Leu Leu Leu Phe	Ala Val His Phe Ala	Val Ala Glu
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Ala Arg Thr Trp His Arg Glu	Gly Arg Trp Arg Val	Leu Arg Leu
3920	3925	3930
Gly Ala Trp Ala Arg Trp Leu	Leu Val Ala Leu Thr	Ala Ala Thr
3935	3940	3945
Ala Leu Val Arg Leu Ala Gln	Leu Gly Ala Ala Asp	Arg Gln Trp
3950	3955	3960
Thr Arg Phe Val Arg Gly Arg	Pro Arg Arg Phe Thr	Ser Phe Asp
3965	3970	3975
Gln Val Ala His Val Ser Ser	Ala Ala Arg Gly Leu	Ala Ala Ser
3980	3985	3990
Leu Leu Phe Leu Leu Leu Val	Lys Ala Ala Gln His	Val Arg Phe
3995	4000	4005
Val Arg Gln Trp Ser Val Phe	Gly Lys Thr Leu Cys	Arg Ala Leu
4010	4015	4020
Pro Glu Leu Leu Gly Val Thr	Leu Gly Leu Val Val	Leu Gly Val
4025	4030	4035
Ala Tyr Ala Gln Leu Ala Ile	Leu Leu Val Ser Ser	Cys Val Asp
4040	4045	4050
Ser Leu Trp Ser Val Ala Gln	Ala Leu Leu Val Leu	Cys Pro Gly
4055	4060	4065
Thr Gly Leu Ser Thr Leu Cys	Pro Ala Glu Ser Trp	His Leu Ser
4070	4075	4080

Pro Leu Leu Cys Val Gly Leu Trp Ala Leu Arg Leu Trp Gly Ala
 4085 4090 4095
 Leu Arg Leu Gly Ala Val Ile Leu Arg Trp Arg Tyr His Ala Leu
 4100 4105 4110
 Arg Gly Glu Leu Tyr Arg Pro Ala Trp Glu Pro Gln Asp Tyr Glu
 4115 4120 4125
 Met Val Glu Leu Phe Leu Arg Arg Leu Arg Leu Trp Met Gly Leu
 4130 4135 4140
 Ser Lys Val Lys Glu Phe Arg His Lys Val Arg Phe Glu Gly Met
 4145 4150 4155
 Glu Pro Leu Pro Ser Arg Ser Ser Arg Gly Ser Lys Val Ser Pro
 4160 4165 4170
 Asp Val Pro Pro Pro Ser Ala Gly Ser Asp Ala Ser His Pro Ser
 4175 4180 4185
 Thr Ser Ser Ser Gln Leu Asp Gly Leu Ser Val Ser Leu Gly Arg
 4190 4195 4200
 Leu Gly Thr Arg Cys Glu Pro Glu Pro Ser Arg Leu Gln Ala Val
 4205 4210 4215
 Phe Glu Ala Leu Leu Thr Gln Phe Asp Arg Leu Asn Gln Ala Thr
 4220 4225 4230
 Glu Asp Val Tyr Gln Leu Glu Gln Gln Leu His Ser Leu Gln Gly
 4235 4240 4245
 Arg Arg Ser Ser Arg Ala Pro Ala Gly Ser Ser Arg Gly Pro Ser
 4250 4255 4260
 Pro Gly Leu Arg Pro Ala Leu Pro Ser Arg Leu Ala Arg Ala Ser
 4265 4270 4275
 Arg Gly Val Asp Leu Ala Thr Gly Pro Ser Arg Thr Pro Leu Arg
 4280 4285 4290
 Ala Lys Asn Lys Val His Pro Ser Ser Thr
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